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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,434	08/18/2003	Hyun Sung Chang	3364P129	8072

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EXAMINER

BAYAT, ALI

ART UNIT PAPER NUMBER

2624

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,434

Applicant(s)

CHANG ET AL.

Examiner

Ali Bayat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/15/05; 8/29/05; 8/18/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: See Continuation Sheet.

Continuation of Attachment(s) 6). Other: Reasons for allowance for claims 2 and 3..

DETAILED ACTION

Claim Objections

1. Claims 3 and 9-10 are objected to because of the following informalities: Claim ends with a period. The period, for ending the claims 3, and 9-10 are missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US 6,356,587) in view of Paik (US 6,370,279).

In regard to claim 1, Choi provides for a method for detecting (Fig.3, element 26, col. 3 line 62, note detector) and classifying block edges from DCT (Discrete Cosine Transform)-compressed images (col.4, lines 2-10, note " the detector 26 determines existence of edge components in a DCT block according to a number of non-zero coefficients of the 63 coefficients for a high frequency region, excluding a direct current component. For example, as it can be known that, the more the number of non-zero coefficients, the more edge components exist, the detector 26 may provide a relevant signal accordingly to the format convertor 27, to determine a edge level according to the number of non-zero coefficients"), which is for detecting the edge of each block from

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DCT-compressed images (col.2 lines 2-4, note "detector 26 determining existence of edge components in a DCT block according to a number of non-zero coefficients of the 63 coefficients" and classifying an edge direction component of each block, the method comprising:

(a) Extracting DCT coefficients by N.times.N blocks constituting the compressed image (Fig.3, element 22, col.3 line 66-col.4 line 1, note a DCT block inverse quantized corresponds to compressed image); and (b) applying an arithmetic operation defined for each direction component to the DCT coefficients obtained in (a) (Fig.3, element 27, col.4 lines 13-18, note "Convertor 27, carries out basic format conversion operations as well as an interpolation operation of the edge components of the input data according to the equation 1" the coded portion corresponds to applying an arithmetic operation to the DCT coefficients). Choi does not provide for comparing the results of the arithmetic operations to determine the edge direction component in (b) and also classifying block edges (in preamble). Paik teaches classifying block edges and determining the edge direction by comparing the results of the arithmetic operations (col.4 lines 19-33, note that obtained DCT coefficients are compared with first and second predetermined threshold values T1 and T2, for detecting the edge direction and further teaching the degrees of direction (45° or 135°), which corresponds to classifying block edges. The prior art of Choi and Paik are combinable, because they from the same field of endeavor (block compression in moving image). One in the art would have been motivated to modify Choi according to Paik to " removing blocking artifacts, caused by another block-based image process", further "for removing blocking artifacts induced in

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processing an image in blocks of a predetermined unit size”(col.2 lines 50-61 of Paik) and therefore it would have been obvious to one in ordinary skill in the art to modify Choi according to Paik.

Allowable Subject Matter

3. Claims 2-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the closest prior art of Choi (US 6,356,587) as modified by Paik (US 6,370,279). Directed to solving “the problem in edge components of an SD progressive, or interlaced scanning image up sampled and converted into an HD interlaced image are not exhibited on a straight diagonal line but on an irregular line, thereby displaying a distorted image” col.2 lines 5-10. The closet prior art failed to teach or suggest for. An arithmetic operation comprises a combination of H, V, and D that are the weighted sums of the extracted DCT coefficients as given according to equations in claim 2. Further the cited prior art failed to teach or suggest for a method of extracting $Y(m, n)=w(m, n)X(m, n)$ that is a multiplication of the DCT coefficient $X(m, n)$ by a quantitative numeric, rather than simply extracting the DCT coefficient, wherein (b) of performing each arithmetic operation comprises determining H, V, and D according to equations in claim 3.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. patent 5,787,204 to Fukuda cited for removing block distortion with simple structure.

U.S. patent 5,841,477 to Kim cited for classifying each of the surrounding blocks into a nonotonus, an edge or texture class.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Bayat whose telephone number is 571-272-7444.

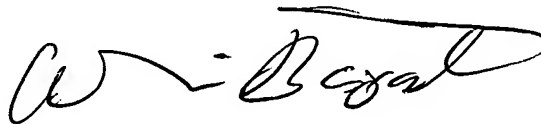
The examiner can normally be reached on M-F 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ali Bayat *AB*
Patent Examiner
Division 2624
11/22/06

A handwritten signature in black ink, appearing to read "Ali Bayat", with a stylized flourish at the end.